Background Information and Optional Management Strategies and Tactics

Sault Ste. Marie District Fisheries Management Plan 1987-2000

A Summary

Ontario
Ministry of Natural Resources
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1.0 INTRODUCTION

1.1 Purpose of This Document

Fisheries management planning is a multistaged process designed to outline the long term (to the year 2000) management direction and detail short term (5 year) management actions at the local (District) level.

Preparation of this document was directed by the District Fisheries Management Planning Manual (June, 1986).

This report was prepared for public distribution in order to:

- summarize and highlight information contained in the detailed background information document;
- briefly outline perceived issues and problems affecting the fisheries resource and its management;
- identify and evaluate potential strategies and optional tactics for managing the local fisheries resource over the planning period (1987-2000); and,
- solicit public input and opinion on the optional management strategies and optional tactics. **A questionnaire is provided at the end of this document for your comments. Please return after completion.**

The detailed background information document is available at the Sault Ste. Marie District Office for public review.

1.2 Fisheries Management Planning Process

The fisheries management planning process involves six steps:

- definition of terms of reference;
- identification of objectives and targets;
- collection and analysis of information and identification of issues and problems;
- identification of optional management strategies and selection of preferred options;
- preparation of a draft plan; and,
- preparation of a final plan.

The initial phase involved the preparation of terms of reference. These terms of reference (September, 1986) guide the planning process by providing details on what is to be achieved and how, through the District Fisheries Management Plan (DFMP). A timetable for the completion of each step in the planning process and approvals required are also incorporated into the terms of reference.

The next step involved the accumulation and synthesis of all available fisheries data and related information into a background information document. This exercise confirmed fisheries targets, identified local issues and problems, and allowed for identification and evaluation of optional management strategies and tactics. Background information documentation was completed by October 3, 1986.

The public will be given two opportunities to provide input into the Sault Ste. Marie DFMP: first, through a review of this summary background information document at a public information centre, to be held in mid April 1987; and secondly, after completion of the draft Fisheries Management Plan (mid-August, 1987). Meetings will also be held with key user groups, prior to the public information centres, to present information and obtain their feedback.

The final Sault Ste. Marie DFMP will incorporate both internal and public reviews. Final approval of the plan must be obtained from the District Manager and the Regional Director of the Ontario Ministry of Natural Resources.

1.3 Supporting Documents

A number of other resource management reports and supporting materials are on file at the Sault Ste. Marie District Office.

Other reference documents include: Strategic Planning for Ontario Fisheries (SPOF) reports; A Framework for Fisheries Management in the Northeastern Region; Northeastern Ontario Strategic Land Use Plan, 1982; Sault Ste. Marie District Land Use Guidelines (DLUG), 1983; Lake Superior Strategic Fisheries Plan 1985-2000 (May, 1986); Lake Huron Strategic Fisheries Management Plan (draft, May, 1986); and, public comments from the Resident Angling Licence Questionnaire and the Great Lakes Plans.

2.0 BACKGROUND INFORMATION

2.1 The Resource Base

2.1.1 Perspective

The Sault Ste. Marie District is one of seven Districts in the Northeastern Administrative Region of the Ministry of Natural Resources (Map 1). The total area of the Sault Ste. Marie District is 1.07 million hectares.

Waters of Lake Superior, Lake Huron and the St. Marys River within the jurisdiction of the Sault Ste. Marie District, encompass 293900 hectares.

Table 1 summarizes the land and water area breakdown within the Sault Ste. Marie District.

Table 1: Land And Water Area
Sault Ste. Marie District

	Area in Hectares
Water	
Inland	48660
Lake Superior (proper)	256280
Upper St. Marys River	1574
Lake Huron (proper)	29918
Lower St. Marys River	6110
Lake Superior Total	257854
Lake Huron Total	36028
Total District Water Area	342542
Land	730819
District Total Area	1073361

Sixty-five percent of the District is Crown Land.

MAP 1

PROVINCIAL AND REGIONAL SETTING OF SAULT STE. MARIE DISTRICT

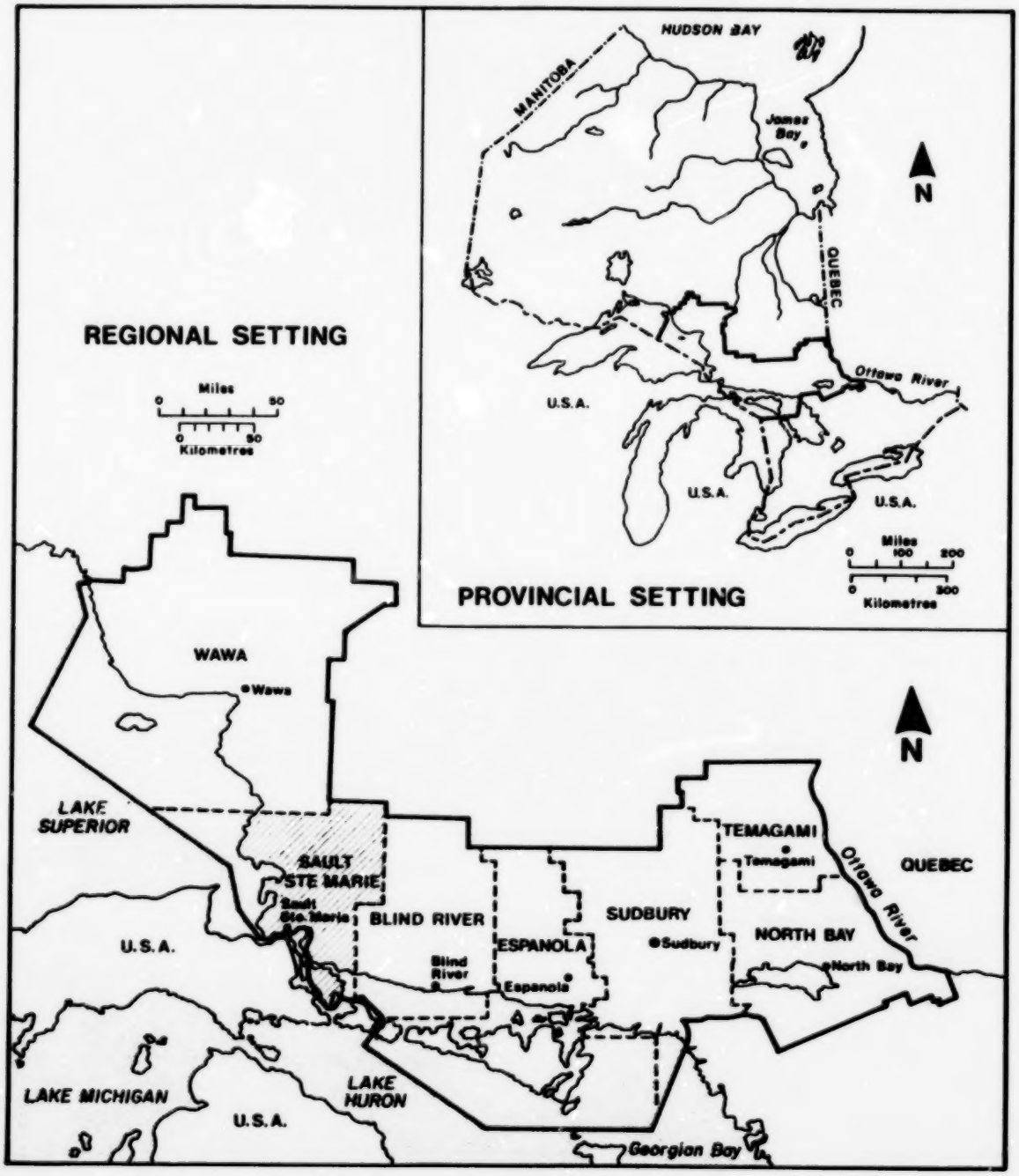
Sault Ste. Marie District

--- District Administrative Boundary

— Northeastern Region Administrative Boundary

-·- Provincial Boundary

--- International Boundary



The population of the Sault Ste. Marie District is approximately 95000 with a projected population of 106400 by the year 2000 (DLUG, 1983).

There are four Indian Reserves (Garden River, Rankin, Batchawana Bay, and Goulais Bay) which are administered by two Band Councils. Resource management on these reserves is under the Councils' jurisdiction.

The Algoma Fisheries Assessment Unit has five study lakes within the boundaries of the Sault Ste. Marie District (Sill L., Vankoughnet Twp.; Saddle L., Lamming Twp.; Goulais L., Butcher Twp.; Megisan L., Carton Twp.; and, Gong L., Handleman Twp).

The federal government has initiated a study to monitor the Turkey Lakes watershed in Norberg and Wishart Township. This is one of the four designated core acid rain monitoring areas across the country. Atmospheric pollutant levels are now monitored on a daily basis to develop trend-through-time data.

The International Joint Commission has identified the lower St. Marys River as an area of concern on the Great Lakes due to polluted water and sediments. Remedial measures to correct this situation are under development.

In addition, the Sea Lamprey Control Centre is presently conducting studies to address the serious sea lamprey problem in the St. Marys River and North Channel of Lake Huron.

2.1.2 The Resource

The Sault Ste. Marie District has been divided into three major zones for fisheries management purposes.

- Lake Superior and its tributaries; (1)
- Lake Huron and its tributaries; (1) and,
- the mainland

These zones are consistent with the Sault Ste. Marie DLUG and the Strategic Fisheries Plans for Lake Superior and Lake Huron.

The fisheries resources of each management zone are summarized in Table 2, with a more explicit account in Appendix I.

The Sault Ste. Marie District contains a wide variety of fish species available to both sport and commercial user groups. There are a number of species not listed in Table 2 but which are harvested by anglers and these species will be identified in the sport fishery section (2.2.4) of this document.

Note (1): Tributaries are defined as that water up to the first obstruction to anadramous fish

Table 2 Summary of Fisheries Resources in the Sault Ste. Marie District

Zone	Surface Area (ha.)	Species Group	Species Potential Yield (kg/yr)	Allocation of Allowable Harvest: Sport Fishery (kg/yr)	Allocation of Allowable Harvest: Commercial Fishery (kg/yr)
Lake Huron	36028	L.Whitefish	1680	860	4225
		Trout/ Salmon	15080	14460	620
		Walleye	16330	13570	2760
		N.Pike	10850	10540	310
		Smallmouth Bass	12560	12560	0
		Other	31480	0	0
	TOTAL		87980	51990	7915
Lake Superior	257854	L.Whitefish	68830	3570	180450
		Lake Trout	64070	6600	31720
		Top Predators	179030	45180	34480
		Herring	34420	0	10000
		Chub	29650	0	36940
		Other	143640	5640	7040
	TOTAL		519640	60990	300630
Mainland	48660	L.Whitefish	310	310	-
		Salmonids	22000	22000	-
		Percids	4360	4360	-
		N. Pike	4130	4130	-
		Smallmouth Bass	3690	3690	-
		Others	24970	24970	-
	TOTAL		59460	59460	-

2.2 Resource Use and Projections

The purpose of this section is to define the current and projected use of the fisheries resource by the various user groups in the Sault Ste. Marie District. These user groups include:

- bait fishermen
- native people
- commercial fishermen
- sport fishermen
- fisheries related tourism operators
- non-consumptive users

2.2.1 Bait Fishery

In 1985, there were 19 licences issued to harvest bait fish and 22 licences issued to sell bait fish in the Sault Ste. Marie District. A total of 260 minnow traps and two seine nets were licenced to the harvesters. The reported District commercial harvest of bait fish was 22396 dozen while outside purchases totalled 24206 dozen. Dace species made up approximately 50% of the District harvest. Other harvested species included chub, suckers, shiners, and other minnows.

The bait fish harvest and value has changed very little over the past 15 years. It would be economically advantageous to promote harvest of Sault Ste. Marie District bait fish stocks rather than buying minnows for resale.

2.2.2 Native Subsistence Fishery

Present areas and populations of the four native reserves in the Sault Ste. Marie District are given in Table 3.

Limited knowledge of the current effort and harvest of the native subsistence fishery is available. Negotiations are presently ongoing at both the Provincial and Federal levels to address native land claims and fishery related issues.

2.2.3 Commercial Fishery

Lake Superior and Lake Huron are the only water bodies in the Sault Ste. Marie District where commercial harvesting is allowed. Conflicts between commercial, sport and tourism users were addressed in the Sault Ste. Marie DLUG. Areas were delineated and conditions specified under which commercial fishing would be allowed (Map 2). The Sault Ste. Marie District presently administers 21 commercial fishermen, one of whom fishes Lake Huron.

Table 3: Area and Population of Native Reserves in Sault Ste. Marie District

Band	Reserve	Area (ha)	No. Members	Members Residing
Batchewana	Rankin	1295		388
	Goulais Bay	749		12
	Batchawana Bay	61		0
Sub-total.....		2105	540	400
Goulais River	Garden River	11538	900	830

Ontario Ministry of Natural Resources

SAULT STE. MARIE
ADMINISTRATIVE DISTRICT
NORTHEASTERN REGION

MAP 2

Present Commercial and Sport Fishing Areas on the Great Lakes

LEGEND

1 - Commercial fishing allowed

2 - Limited commercial fishing allowed

3 - Sport fishing only

SCALE

1 cm = 7 km

DLUG 1983

SM10255

January 1974

Lake Superior

There are 32 commercial fishing licences issued to 27 fishermen for all of eastern Lake Superior. Twenty-two commercial fishermen holding 26 licences have commercial quotas in Sault District waters (i.e. zones 32, 33, and 34). Two of these fishermen are licenced by Wawa District, leaving 20 administered from the Sault Ste. Marie District.

Five species are harvested commercially in the Sault Ste. Marie District portions of Lake Superior. For these species, the 1986 quotas and harvest are:

Species	Reported Harvest(kg)	Species Quota (kg)
Lake Trout	22762	31722
Whitefish	84297	88340
Pink Salmon	7	6270
Herring	1210	12348
Chub	3489	68988
Total	111765	207668

The reported catch records indicate that the inshore (zones 33 and 34) fishery is mainly for whitefish, whereas the offshore (zone 32) fishery is primarily lake trout.

The M.N.R. will continue to regulate the commercial harvest by quotas, to the year 2000. It is the objective of the M.N.R. to restore all fish species in Lake Superior to a healthy, stable, self-sustaining state.

Lake Huron

There are 19 commercial fishing licences presently issued to 16 commercial fishermen for the North Channel of Lake Huron, Zone NC-01 (Area 1 east of St. Joseph Island, Map 2). This zone consists of waters in three M.N.R. Districts (Sault Ste. Marie, Blind River, and Espanola). Only one of these fishermen is administered by the Sault Ste. Marie District. Seven of the 16 fishermen use District waters of NC-01 with varying degrees of effort (i.e. from 10 to 100%). The remaining nine fishermen seldom use Sault Ste. Marie District waters.

Reported harvest (1986) for the one commercial fisherman licenced by the Sault Ste. Marie District indicates that walleye and whitefish account for over 37% of his catch. The harvest by species and 1986 quotas for this fisherman are as follows:

Species	Reported Harvest(kg)	Species Quota(kg)
Lake Trout/ Splake	12	238
Whitefish	3396	4225
Pink Salmon	331	375
Walleye	2813	2761
N. Pike	535	310
TOTAL	7087	7909

The fisheries resource in Lake Huron is regulated by the M.N.R. through quotas. The Lake Huron Fisheries Assessment Unit (LHFAU) offers baseline information which the District uses to set quotas. The M.N.R. objective is to restore a balanced fish community in Lake Huron, which at present lacks top predators. Commercial quotas by the year 2000 should reflect a rehabilitated Lake Huron.

2.2.4 Sport Fishery

Sport fishing will be discussed according to the three major fishing zones identified for the Sault Ste. Marie District. The estimated sport fishing effort and harvest for the Sault Ste. Marie District is 150800 angler-days (one angler-day = four angler-hours) and 116400 kg per year, respectively. The 1980 Provincial Mail Angler Survey estimated that 73.8% of anglers who fished in the Sault Ste. Marie District were residents of Ontario.

The sport fishing effort is expected to increase by 12%, by the year 2000.

Lake Superior

Sport fishing on Lake Superior in the Sault Ste. Marie District has traditionally been restricted to a number of accessible and heavily used areas.

The estimated sport fishing effort and harvest are 29700 angler-days of effort and 37300 kg of fish per year respectively. The harvest is distributed among rainbow trout (58%), lake trout (10%), yellow perch (10%), lake whitefish (6%), and northern pike (6%). Other harvested species include: brook trout, pacific salmon (i.e. coho, chinook, and pink salmon), walleye, smallmouth bass, and muskellunge.

The Lake Superior Fisheries Management Plan states that the target to the year 2000 for the sport fishery on Lake Superior will be to provide a quality standard of 1.0 kilogram per angler-day. The Lake Superior portion of Sault Ste. Marie District presently provides 1.3 kg/angler-day.

Projected use of the fisheries resource has been estimated using the 1.0 kg/opp. (one opportunity = one angler-day) target for Lake Superior. Increases in effort, based on population projections have also been considered. In addition, recent municipal plans to stock chinook salmon in Lake Superior have been incorporated into these estimates. Finally, walleye potential yields have been calculated for the Sault Ste. Marie District portions of Lake Superior. It is felt that if this stock was rehabilitated, anglers would harvest this species to its potential. It is estimated that the fisheries resource of Lake Superior in the Sault Ste. Marie District will be required to provide 60980 opportunities and 60980 kilograms of fish, by the year 2000.

Lake Huron

Sport fishing in the Sault Ste. Marie portions of Lake Huron has traditionally been a coolwater fishery, where northern pike, walleye, yellow perch, and pan fish have been the species of preference. The recent introduction of salmon has stimulated angler interest. This species comprises the largest portion of the anglers creel. Because of Michigan's proximity and the fact that common waters and fish stocks are exploited, the number of non-resident anglers on Lake Huron is higher than the rest of the Sault Ste. Marie District. In addition there are numerous tourist operations on the north shore of Lake Huron.

Estimates of current angling effort and harvest were calculated for 42 significant sport fishing locations on Lake Huron, in the Sault Ste. Marie District. The current angling effort of 36000 angler-days yields 44200 kg of fish. The Lake Huron portion of the District provides 1.2 kg of fish/angler-day.

The harvest (by weight) is distributed among pink salmon (37%), northern pike (32%), chinook salmon (14%), rainbow trout (5%), and yellow perch (5%). Other species harvested include: lake trout/splake, brook trout, brown trout, coho salmon, walleye, lake whitefish, herring, smallmouth bass, sturgeon, brown bullhead, and pan fish species.

The target quality standard for the North Channel is 1.0 kg/opp. coupled with expected increases in angling effort of 12% by the year 2000. For those species where the current angling quality was above the target, harvest estimates increased by 12%. The municipal plan to stock chinook salmon in the Lower St. Marys River was incorporated into these estimates. Walleye stock rehabilitation will occur in Lake Huron in an attempt to help restore a balanced top predator component and to increase angling opportunities.

The resulting estimated sport fish demand for Lake Huron fish in the Sault Ste. Marie District by the year 2000 is 70300 opportunities and a corresponding 70300 kg of fish.

Mainland

Trout species, notably brook trout, could be considered as the most prevalent sport fish species on the mainland of the Sault Ste. Marie District.

Angling effort is heaviest from May to September. The major factor controlling angling effort appears to be the ease of access.

The 1980, Provincial Mail Angler Survey estimates that 85,200 angler-days of effort were exerted on the mainland portion of the Sault Ste. Marie District.

The 1980 survey also revealed that 40% of the anglers who fished in Ontario, if given a choice, would prefer to catch walleye. Thirty-five percent of anglers contacted preferred trout, leaving 25%, who preferred other species. Considering that the Sault Ste. Marie District consists primarily of "trout waters", species preferences for the Sault District were adjusted as follows:

- 45% of anglers prefer trout; (where trout includes brook, lake and rainbow trout);
- 30% prefer walleye; and
- 25% prefer other species.

Harvest estimates were based on current angling quality (based on creel surveys across the region) and effort estimates. These values were as follows:

- 0.3 kg/opp of coldwater species (i.e. trout); and,
- 0.5 kg/opp of warm and coolwater species (i.e. walleye and other).

It is estimated that 34900 kg of fish are currently harvested from the mainland zone of the Sault Ste. Marie District. This value is best understood as the current demand for fish on the mainland partitioned by preferred fish species. Comparison of these estimates with the mainland supply identified, in a broad sense, where shortfalls and/or surpluses exist in the mainland fisheries. The fisheries resource will have to provide 95400 angler-days of effort and 39100 kg of fish, by the year 2000 based on the estimated 12% increase in angling effort.

2.2.5 Fisheries Related Tourist Establishments

As of June, 1986, there were 36 tourist establishments within the Sault Ste. Marie District catering to anglers (Map 3). There is a major concentration of establishments in the southeastern portion of the District, which provides fishing opportunities for warmwater species, and a smaller number of establishments on the shores of Lake Superior.

Four of the establishments provide fly-in services to remote lakes within and outside of the Sault Ste. Marie District. The five potential outpost camps (Map 3) have limited potential for development due to future access plans.

The preservation and enhancement of fisheries habitat for the Sault Ste. Marie area is expected to stimulate growth in tourism. The Great Lakes areas have the most potential for growth in tourism. There appears to be little growth potential for consumptive based tourism in inland lakes.

2.2.6 Non Consumptive Use of the Fisheries Resource

Within the boundaries of the Sault Ste. Marie District there are major attractions that provide oportunities for people to view some aspect of the fisheries resource.

The Tarentorus Fish Culture Station, located 10 km north of downtown Sault Ste. Marie, provides opportunity to view the fish rearing process. In 1985, eight thousand people toured this facility. Current renovation of this hatchery will make it more appealing to visitors. The new facility will have an interpretive centre, and it is anticipated that from 15 to 20 thousand people will be accomodated annually.

The St. Marys Rapids and Whitefish Channel located in Sault Ste. Marie have a tremendous potential as a fisheries interpretive area to view rainbow trout and pacific salmon spawning activities. Plans are presently underway to develop this viewing and interpretive opportunity in conjunction with the City's waterfront development project.

Another major attraction in the Sault Ste. Marie District is Chippewa Falls, located approximately 56 km north of Sault Ste. Marie on Hwy. 17. The falls provides a natural barrier to the migration of rainbow trout and pacific salmon. The feasibility of locating a fish ladder over the falls is presently under investigation.

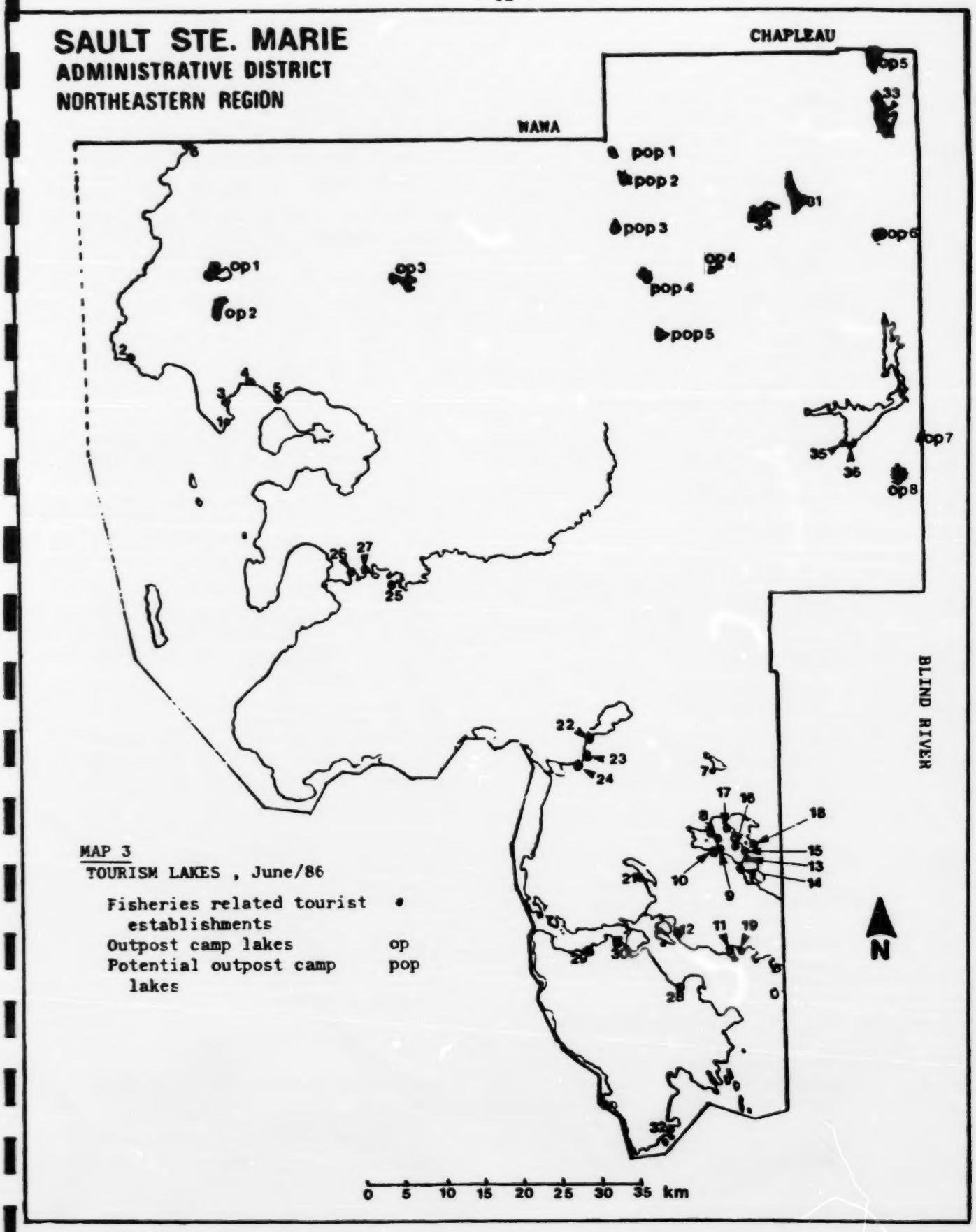
The non-consumptive use of the fisheries resource is gaining popularity at the present and this trend is expected to continue.

2.3 Present Fisheries Management Practices

2.3.1 Inventory and Assessment

Netting studies have been carried out on the Goulais and Chippewa Rivers, over the last three years. The purpose of the Goulais River study was to determine the status of the walleye population in the lower river. The Chippewa River study explored migratory patterns of a number of fish species.

Hatchery survival assessments have been conducted on four lakes to determine success rates of brook trout stockings.


SAULT STE. MARIE
ADMINISTRATIVE DISTRICT
NORTHEASTERN REGION
CHAPLEAU
WAWA
BLIND RIVER
pop 1
pop 2
pop 3
pop 4
pop 5
op1
op2
op3
op4
op5
op6
op7
op8
N
0 5 10 15 20 25 30 35 km
MAP 3
TOURISM LAKES , June/86
Fisheries related tourist establishments •
Outpost camp lakes op
Potential outpost camp lakes pop

Lake trout spawning bed surveys have been done on six A2 lake trout lakes. These lakes have less than 100% crown ownership of their shoreline and it is imperative that spawning locations be delineated.

Aquatic Habitat Inventory

These surveys are essential to determine resident fish community structures and relative abundances.

To date, 206 lakes have been inventoried with a total area of 20190 ha, which is 41% of the District's total productive water area. A total of 17 streams having a length of 305 km, have been inventoried.

User Surveys

A total of 39 creel surveys have been conducted in the Sault Ste. Marie District over the last three years, on both cold and warm water fisheries.

Assessment Units

The M.N.R. has two fisheries assessment units which operate in the Sault Ste. Marie District.

The Algoma Fisheries Assessment Unit (A.F.A.U.) has five of its eight study lakes located in this District. The mandate of the A.F.A.U. is to collect, analyse and interpret trend-through-time data on the response of fish communities to various levels of stress.

The Lake Superior Fisheries Unit (L.S.F.U.) has a branch office in the Sault Ste. Marie District, responsible for eastern Lake Superior. The unit activities include the collection and analyses of trend-through-time commercial fisheries and forage fish data.

Contaminant Sampling

Contaminants in the water and fish flesh, such as mercury, PCB's, and other heavy metals, are a potential health hazard to the fish and to people who consume the fish. The M.N.R. does not have a direct mandate to monitor contaminants but plays an active role in collecting samples for the Ontario Ministry of Environment and The Canada Department of Fisheries and Oceans.

2.3.2 Operations

There are five Conservation Officers, two of whom are primarily concerned with the commercial fishery, and one Enforcement Co-ordinator plus fifteen Deputy Conservation Officers working in the Sault Ste. Marie District.

Also involved in the fisheries program are a Fish and Wildlife Supervisor, District Biologist, Fisheries Management Officer, as well as clerical and seasonal staff.

This staff implements and performs the various management and enforcement programs of the District.

2.3.3 Population Management

Fish Stocking

Appendix II summarizes those water bodies stocked in the Sault Ste. Marie District.

2.3.4 Habitat Management

The habitat management program in the Sault Ste. Marie District involves spawning bed enhancement and stream bank rehabilitation. Spawning bed improvements have been

carried out in the St. Marys Rapids, Thessalon River, Whitefish Channel, Little Carp River, Tilley Creek and an unnamed creek flowing into Prince Lake.

Stream bank improvements have been performed on East and West Davignon Creeks, Bennett Creek, Little Carp River, and the Bennett - West Davignon Diversion Channel.

With the exception of the St. Marys Rapids, Thessalon River and Tilley Creek, all these projects were carried out through a Community Economic Transformation Agreement (CETA) project in 1985. This project was a joint venture that included the M.N.R., the Sault and District Anglers Association, and the City of Sault Ste. Marie.

2.3.5 Public Service

Public Involvement and Extension

Both internal and external services are provided by District staff.

In addition to general administration and planning functions, internal services include the review of numerous work plans and applications and maintaining active liason with municipalities and other provincial, federal, and state agencies.

External services include extension visits to promote fisheries management and provide technical expertise. The Community Fisheries Involvement Program (CFIP) and CETA programs require a great deal of effort in the administration and supervision of projects.

The fisheries services include public relations and educational functions, through public meetings and news releases.

Community Fisheries Involvement Program (CFIP)

The Sault Ste. Marie District has been involved with CFIP projects since 1984 when two "mini-hatcheries" were set up, one to raise chinook salmon and rainbow trout and the other to raise walleye. The Sault and District Anglers Association were the proponents of these two hatcheries.

The walleye hatchery has been moved from the original location on the Goulais River to Batchawana Bay. Development plans for this facility include the construction of rearing ponds to raise the walleye to a larger size prior to stocking.

Community Economic Transformation Agreement (CETA)

In 1985, twelve sport fishing development projects were funded by the Ontario Ministry of Treasury and Economics and administered by the M.N.R.. There were 13 projects agreed upon with only one not completed. Major projects included inner city stream surveys and assessments, stream rehabilitation, creel surveys and lake trout spawning potential studies in Batchawana Bay. Other projects completed were repair and development of boat launches, garbage clean-up, and the construction of a boardwalk on the St. Marys River waterfront in downtown Sault Ste. Marie.

2.3.6 Support Services

Fish Culture Facilities

The Tarentorus Fish Culture Station is the only Provincially run hatchery in the Sault Ste. Marie District (current capacity is 800,000 fish per year).

Lake trout and brook trout are reared in this facility. Presently, eggs for incubation come from the Dorion Fish Culture Station near Thunder Bay.

The fish are used to rehabilitate naturally reproducing populations and provide artificial fishing opportunities for the public. The facility supplies fish to many Districts, including Wawa, Sault Ste. Marie, Blind River, Espanola, Sudbury and Parry Sound.

Presently, a new facility is being constructed at the Tarentorus site with a target completion date of 1988. The new Fish Culture Station will have a production target of 1.8 million fish per year.

2.4 Supply/Demand Analysis and Target Refinement

This section will be partitioned between the three major zones in the Sault Ste. Marie District so that zone specific surpluses or deficits of the fisheries resource can be determined. Table 4 summarizes the supply of fish in this District, current and projected use, DLUG and the Great Lakes targets, and refined targets for public discussion. The Lake Superior targets are not firm at this time, however will be finalized by the time the Sault Ste. Marie District final plan is written. The analysis of the supply/demand to the year 2000, is particularly important because the results of this analysis will identify issues and problems, and affect optional management strategies and tactics. This exercise may also alter and refine DLUG targets.

2.4.1 Native Subsistence Fishery

The extent of the Native subsistence fishery in the Sault Ste. Marie District is unknown. Targets for native groups are uncertain at this time.

2.4.2 Commercial Fishery

Bait Fish

The Sault Ste. Marie District potential for bait fish is presently unknown. Demand for bait fish exceeds the current District harvest.

Food Fish

As of 1987, quotas have been adjusted in accordance with population fluctuations of both herring and chub in order to allow these populations to increase.

Because quotas are established for all of zone NC-01, which covers Lake Huron portions of three M.N.R. administrative Districts, it is difficult to analyse the supply/demand situation on a District basis. However, some general comments can be made. The present community structure in the North Channel is skewed towards forage fish species (i.e. whitefish, chub, smelt, etc.) because of a general lack of top predators. Present commercial quotas have been assigned to take advantage of this imbalance. As rehabilitation efforts to restore a

TABLE 4: TARGET REFINEMENTS

	Current Use		DLUG Target		Projected Use		Potential Yield		Interim Target	
	kg	Ang-Days	kg	Ang-Days	kg	Ang-Days	kg	Ang-Days	kg	Ang-Days
COMMERCIAL FISHERY										
A) Baitfish (Dozen)	22396	--	None	--	46680	--	Unknown	--	46682	--
B) Food Fish										
LAKE SUPERIOR										
Lake Trout	22762	--	--	--	40000	--	64070	--	31720	--
Whitefish	84297	--	--	--	68830	--	68830	--	180450	--
Herring	1210	--	--	--	34417	--	34417	--	10000	--
Chub	3489	--	--	--	36940	--	29653	--	36940	--
Pink Salmon	7	--	--	--	Unknown	--	Unknown	--	34480	--
TOTAL	111765		410000						293590	
LAKE HURON										
Lake Trout/Splake	12	--	--	--	240	--	240	--	240	--
Pink Salmon	331	--	--	--	380	--	380	--	380	--
Whitefish	3396	--	--	--	4225	--	Unknown	--	4225	--
Walleye	2813	--	--	--	2760	--	2760	--	2760	--
N. Pike	535	--	--	--	310	--	310	--	310	--
TOTAL	7087		10000		7910				7910	

TABLE 4: TARGET REFINEMENTS (Cont'd)

	Current Use		DLUG Target		Projected Use		Potential Yield		Interim Target	
	kg	Ang-Days	kg	Ang-Days	kg	Ang-Days	kg	Ang-Days	kg	Ang-Days
SPORT FISHERY										
MAINLAND										
Trout	11496	38320	--	--	12880	42920	21740	72460	12880	42920
Walleye	12773	25556	--	--	14310	28610	4040	8080	4040	8080
Others	10644	21289	--	--	11920	23840	33420	100550	11920	23840
TOTAL	34913	85165	81000	141000	39110	95370	59200	181090	28840	74840
LAKE SUPERIOR										
Salmonids	28644	18968	--	--	65000	65000	--	--	40450	40450
Percids	3454	4836	--	--	13750	13750	124250	124250	13750	13750
Esocids	2458	2258	--	--	2750	2750	--	--	2750	2750
Whitefish	2481	3188	--	--	3570	3570	3570	3570	3570	3570
Others	227	402	--	--	450	450	Unknown	Unknown	450	450
TOTAL	37264	29652	None	None	85520	85520			60970	60970
LAKE HURON										
Salmonids	25549	12361	--	--	32190	32190	14465	14465	14470	14470
Percids	3549	8816	--	--	18730	18730	Unknown	Unknown	18730	18730
N. Pike	14178	11941	--	--	15880	15880	10540	10540	10540	10540
Coregonids	479	1108	--	--	1240	1240	Unknown	Unknown	1240	1240
Others	469	1733	--	--	2245	2245	Unknown	Unknown	2245	2245
TOTAL	44224	35959	None	None	70285	70285			47225	47225

balanced fish community in Lake Huron progress (i.e. increases in walleye, lake trout, lake trout backcross, and salmon) some alterations to quotas can be expected. These might include increases in top predator quotas and decreases in forage fish quotas.

2.4.3 Sport Fishery

The supply of trout species can accommodate the expected demand; however, much of the potential for trout is made up in brook trout that may not be as easily accessible.

The mainland zone has only 13 water bodies known to contain resident walleye populations. The current and projected demand for this species exceeds the supply by a three fold margin. Satisfying this demand will be the greatest challenge for fisheries managers in the Sault Ste. Marie District. It is clear that even if walleye are introduced into other waterbodies and all present walleye lakes were producing at peak potential, the mainland by itself could not realistically supply projected demand. In order that demand for walleye be satisfied across the District, present stocks in both Lake Huron and Lake Superior need to be rehabilitated and the use of these stocks will have to be promoted.

The potential supply of top predators in the Sault Ste. Marie portions of Lake Superior can accommodate projected angling demand. However, lake trout rehabilitation will have to be addressed as well as the effects of introducing salmon on the present fish community of Lake Superior. Walleye rehabilitation, as was mentioned above, must be given consideration. Generally the supply of other species can also accommodate projected use.

Species specific shortfalls do exist. Trout and salmon current and projected demand is higher than the Sault Ste. Marie supply. The majority of salmon harvest occurs in Lake Huron and consists of pink salmon. The majority of Sault Ste. Marie District sport and commercial harvests will be of salmon which realized their growth potential either in U.S. waters or other M.N.R. Districts. Therefore, inter-agency communication is essential in developing realistic targets on Lake Huron.

As is the case for Lake Superior, walleye rehabilitation in Lake Huron is important to the overall District supply/demand for this species.

Northern pike supplies in Lake Huron may become limited in the future and should be monitored closely.

A surplus in smallmouth bass has been identified on Lake Huron. With little information available on smallmouth bass this calculated surplus may be erroneous. In addition the potential supply of bass from the St. Marys River may be over-estimated. However, creel results from years of investigations on the north and south shores of St. Joseph Island and the Echo Bay area, show that bass, for the most part, are incidental to anglers' creels at present. The exploitation of this species should be promoted.

2.5 Problems and Issues

2.5.1 Exploitation

The fisheries resources of Sault Ste. Marie District are unevenly exploited. Some of the accessible lakes primarily coolwater lakes, are heavily exploited while those with limited access are not exploited.

Over-exploitation of walleye stocks has occurred on all inland lakes and the Goulais Bay area of Lake Superior.

Several lake trout lakes in the District are heavily exploited and some are known to be over-exploited.

- Lake trout lakes known to be over-exploited include:

  Inner Batchawna Bay, Lake Superior
  Gong Lake, Handleman Twp.

- Lake trout lakes which are heavily exploited include:

  Skintent Lake, Cuthbertson Twp.
  McMahon Lake, McMahon Twp.
  Iron Lake, Meredith Twp.
  Bone Lake, Tupper Twp.
  Quintet #2, Davieaux Twp.
  Magrath Lake, Cuthbertson Twp.
  Patter Lake, McMahon Twp.
  McCarroll Lake, Meredith Twp.
  Mongoose Lake, Vibert Twp.
  Trapper Lake, Reilly Twp.

Due to the lack of recent estimates of effort , it is likely that the above list underestimates the extent of exploitation.

Currently, there are a number of species in the Sault Ste. Marie District which are rarely harvested; these include smallmouth bass, northern pike, whitefish, herring, brown-bullheads, ling, suckers and carp.

A few locations where these species may be sought are the inshore Lake Superior and Lake Huron areas.

If fishing pressure could be shifted onto these stocks, some of the pressure would be taken off the historically preferred species.

2.5.2 Lack of Public Awareness and Unrealistic Resource Demands

The public is generally unfamiliar with fundamental fisheries management concepts such as carrying capacity, species interactions and the relative merits of artificial fish stocking, rehabilitation and self-sustaining populations. In many instances this results in unrealistic expectations about resource capability and management success.

In other cases there appears to be a poor understanding of the complexity and sensitivity of aquatic resources and the value of sound land use practices.

As the public becomes more involved in fisheries management there will be the temptation for them to drive the system towards personal short-term gain rather than management for the future. Through education and communication with co-managers we will be able to manage fisheries in a reasonable manner.

2.5.3 Undesirable Species Introduction

A fish species may be termed undesirable if it does not occur naturally in a particular body of water and once introduced has either a direct negative impact on a desired sport fish or indirect impact in terms of competition for forage.

Most instances occur due to accidental introductions of nuisance species. For example, anglers dumping livebait containers into lakes or introducing smelt eggs when cleaning their catch. Sometimes a good intentioned sportsman feels he is doing a good deed for a particular body of water by stocking the lake with an exotic species.

Key areas where undesirable species have been introduced in the District are:

Perch	Paquette Lake Island Lake Northland Lake Lonely Lake
Rockbass	Adelaide Lake Ojidaki Lake
Smelt	Mamainse Lake Northland Lake Rock Lake Meredith Lake

2.5.4 User Conflicts

Conflicts exist between the various groups using the fisheries resource of the Sault Ste. Marie District.

Tourist operators on the isolated inland lakes are in conflict with timber companies which, through road construction, provide access to sport fishermen. As access to isolated tourist outpost lakes is increased, the tourist operator can no longer offer the high quality fishing or wilderness experience to their clientele. The outpost camp areas are shown on Map 3.

Commercial fishermen are in conflict with the sport fishermen in terms of allocation of fish and location of commercial fishing boundaries. The allocation issue is a result of the large number of top predators presently existing in Lake Superior that could potentially cause a forage base crash. However, none of the non-native top predators have been allocated to the commercial fishermen, allowing the sport angler to reap the benefits alone.

The fishing area conflict is mostly centred around the Seine Islands in the North Channel. The sport fishermen would like to see their area extended to a line along the east side of the islands rather than the west side (Map 2). However, most of the commercial fishermen's success occurs in this sliver of lake.

2.5.5 Inadequate Fisheries Information

The Ministries inadequate knowledge of a situation is the basis for several fisheries management concerns in the Sault Ste. Marie District.

A major concern exists with the Pacific salmon stocking program. The impact of these western species upon indigenous stocks of top predators in the Great Lakes is unknown. At the present it must be assumed that these fish are in direct competition for forage stocks and spawning habitat with the natural lake and brook trout stocks.

Other concerns lie with the inability to accurately estimate potential yields for areas not sampled. Many waterbodies remain unsurveyed.

There is a limited understanding of the impacts of long term alterations to aquatic ecosystems.

An incapacity to make sound management decisions occurs when fisheries managers are unable to obtain reliable harvest information from sport and commercial fishermen.

2.5.6 Habitat Loss and/or Degradation

Habitat loss and degradation exist in several forms in the District. These can be the result of natural phenomenan or man's activities. The result is spawning and nursery habitat destruction or degradation.

. Lakes affected include:

Echo Lake, Kehoe Twp.
Jocko Lake, Nicolet Twp.
Lake 13A, Gaudry Twp.
Lake 24, Lunkie Twp.
Midge Lake, Deroche Twp.
Prince Lake, VanKoughnet Twp.
Sandy Lake, Duncan Twp.
Spruce Lake, Davieaux Twp.

Contamination of lakes and fish flesh by natural as well as industrial pollutants is also a concern.

The lakes of Sault Ste. Marie District (which have been tested by the Ministry of the Environment for relative mercury (Hg) levels in fish flesh) are:

Lakes Tested	Species Tested	Hg Levels
Echo	walleye,	medium
	n. pike	"
Gong	brook and	high
	lake trout	"
Gordon	walleye,	high
	n. pike	"
Goulais	brook and	medium
	lake trout	"
McCarroll	lake trout	medium
Ranger	lake trout	low
Saddle	brook trout	low
Saymo	lake trout	medium
Huron	northern pike	low
	wht. sucker	"
	yellow perch	"
	rainbow trout	"
	walleye, and	"
	lake trout	"
Superior	walleye	high
	lake trout	low
	whitefish	"
	rainbow smelt	"
	yellow perch	"
	n. pike, and	"
	cisco	"

It may be noted that as more lakes are tested this list is expected to grow.

Lake acidification also results in habitat loss. Two very small lakes in the vicinity of Wolfe Lake are termed acidic while 33 others, scattered about the District, are extremely sensitive. A great deal of inland water is of a moderate to low sensitivity type. Only three lakes tested on the mainland of Sault Ste. Marie District are not sensitive.

Rivers and streams are also very susceptible to natural and man-made alterations. Damming a river has major effects on a watershed as well as access to spawning and nursery habitat by migratory fishes. Inappropriate construction and agricultural practices increase siltation rates tremendously. This disrupts spawning behaviour and habitat. A problem exists with uncontrolled dredging and filling of lakeshore and wetland area by private individuals. With improper timing and methods spawning and nursery habitat are lost.

Rivers affected by the increased siltation include:

Bar
Echo
Garden
Stobie Creek
Robertson Creek
Kerwin
Stokely
Goulais
Chippewa
Government Creek
Two Tree

3.0 OPTIONAL MANAGEMENT STRATEGIES AND TACTICS

3.1 Introduction

One of the most important components of the planning process is the identification, evaluation, and selection of feasible fisheries management strategies and associated tactics to achieve the stated targets.

Basically, strategies are planned actions to achieve a desired end while tactics are the specific management projects that could be carried out to implement the strategy.

Selected strategies must resolve the stated problems in order to achieve the assigned target.

Public input into this part of the planning process is vital if mutually agreed solutions to the District's fisheries resource problems are to be achieved.

3.2 Summary and Evaluation of Management Options

Optional management strategies and tactics, which address each issue or problem, are outlined in Table 5.

TABLE 5: Optional Management Strategies and Tactics

PROBLEM/ISSUE - EXPLOITATION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS	COMMENTS
(1) CONTROL HARVEST	(a) Reduce quotas and catch limits	- losses to the tourism economy may outweigh resource gains
	(b) Allocate fish resources between commercial and sport users	- presently being performed
	(c) Designate areas as fish sanctuaries during spawning periods (e.g. Goulais River)	- successful method of protecting brood stock
	(d) Permit fly-fishing only on particular trophy streams (i.e. sections of Echo River, East Goulais River and East Chippewa River)	- offers an alternate fishing experience to a limited user group thereby reducing harvest
	(e) Alter season on trout lakes (winter closures in northeast quarter of District)	- decreases the fishing pressure on the trout waters in this particular section
	(f) Redistribute fishing pressure (e.g. direct interest to walleye stocks in the North Channel, increase access to more waterbodies)	- must provide more information in angling methodology for these areas to sell program
	(g) Control illegal (snagging) fishing at barriers (e.g. St.Marys tailrace)	- requires more enforcement officers
(2) RESTORE OR ENHANCE HABITAT	(a) Rehabilitate spawning beds (e.g. Bar River, Echo River, Goulais River)	- presently underway in certain areas, potential CFIP projects; produces a good return for effort
	(b) Remove barriers or offer alternatives to spawning run impasses, (e.g. lamprey barriers on the Echo River Gimlet Creek, Stokely Creek)	- possibilities exist in walleye fishways around lamprey barriers and with cooperative efforts with Sea Lamprey Control
	(c) Increase Bar River sanctuary and designate other areas (e.g. Goulais spawning grounds) as fish sanctuaries	- restrictive approach however protects stocks when they are readily accessible

TABLE 5 (Cont'd)

PROBLEM/ISSUE - EXPLOITATION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS	COMMENTS
(3) STOCKING PROGRAM	(a) Introduce adult walleye on rehabilitated spawning grounds e.g. Bar and Echo River	- could produce self-sustaining population and increase productive area
	(b) Stock lakes which have been damaged by undesirable species (e.g. perch in Island Lake, Heyden Lake) with walleye	- produces a useful fishery for a demand species in lakes which are borderline for any trout productivity
	(c) Stock splake on put-delayed-take basis in intensive day-use areas (e.g. Northland Lake)	- would produce an easily accessible fishery for a large proportion of the areas population
(4) PROMOTE ANGLING FOR UNDER-USED SPECIES (e.g. smallmouth bass, whitefish, herring, bull-heads)	(a) Advertise and educate anglers in enjoyment value of fishing this portion of the resource	- with more varied angler experiences the fishing effort for historically preferred species decreases
	(b) Develop angling methodology program	- has promise in showing the anglers the enjoyment value in fishing the alternate stocks
	(c) Direct tourism operators towards resource (e.g. experiment with ice huts off St.Joseph's Island)	- possibility of successful business in promoting the whitefish and herring fishing off the Island

PROBLEM/ISSUE - PUBLIC AWARENESS AND PERCEPTION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS	COMMENTS
(1) EDUCATION	(a) Introduce conservation ethics through school curriculum	- education of the youth is an excellent long-range strategy
	(b) Hold public seminars	- necessary, however usually doesn't get to a large portion of public
	(c) Proactively develop media (radio and newsreleases)	- reaches a broader audience
	(d) Increase television productions (e.g. Fish On)	- can reach the largest audience

TABLE 5 (Cont'd)

PROBLEM/ISSUE - PUBLIC AWARENESS AND PERCEPTION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS	COMMENTS
(2) PARTICIPATION IN FISHERIES MANAGEMENT	(a) Form an Advisory Committee to discuss fisheries related problems	- possibility when dealing with conflicting uses
	(b) Get members of the public involved in CFIP projects (e.g. Sault Anglers Association)	- excellent method, creates great respect for the resource as well as being cost efficient
	(c) Educate co-managers with respect to proper resource management	- increase awareness of long-range goals
(3) INCREASE OPPORTUNITIES FOR NON-CONSUMPTIVE USERS	(a) Expand fish culture viewing facilities to accommodate tourists	- presently underway at Tarentorus Fish Culture Station
	(b) Provide viewing areas at salmonid spawning run locations	- possibility of locating a viewing area at Chippewa Falls, presently under discussion
	(c) Publicize viewing areas	- often necessary or the areas are underused

PROBLEM/ISSUE - UNDESIRABLE SPECIES INTRODUCTION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS	COMMENTS
(1) EDUCATION	(a) Inform public of hazards of dumping live bait into waterbodies (e.g. posters at bait dealers)	- much of this stocking is unintentional and a gentle reminder is all that is necessary
	(b) Inform public of the possibility of transferring smelt to another body of water while cleaning the catch	- this is usually not known and the knowledge of the possibility of spawn transfer is the best deterrent
(2) REGULATORY SOLUTIONS	(a) Ban the use of live-bait in the high quality fishing area (e.g. northeast quadrant of the District)	- would also aid in keeping harvest at an acceptable level

TABLE 5 (Cont'd)

PROBLEM/ISSUE - USER CONFLICTS

OPTIONAL MANAGEMENT STRATEGIES	TACTICS	COMMENTS
(1) PROMOTE CO-OPERATION AMONG USER GROUPS	(a) Hold regular meetings between user groups to discuss conflicts	- plausible in most situations
	(b) Set up a Permanent Advisory Committee with a representative from each faction involved to air views	- would facilitate communication between groups
	(c) Educate user groups	- gains understanding of problem
(2) AVOID CONFLICT BY ALLOCATION OF RESOURCE	(a) Designate areas as sport or commercial fishing only	- presently being done, alleviates some conflicts (e.g. Great Lakes only)
	(b) Research Pacific salmon effects on forage species (e.g. chub and herring)	- should be undertaken but is a costly venture
(3) ENSURE USE OF APPROPRIATE TIMBER PRACTICES	(a) Delineate buffer zones around tourist operation outpost lakes	- presently in Timber Management Plan
	(b) Use winter roads (i.e. in high quality fishing area)	- possible alternative to limit some access
	(c) Offer alternate areas to tourist operators	- difficult to influence operators in this direction

PROBLEM/ISSUE - INADEQUATE FISHERIES INFORMATION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS	COMMENTS
(1) ASSESS PRESENT POPULATION	(a) Collect lake specific harvest information	- in order to see localized stock depletions
	(b) Assess Great Lakes feeder streams	- to determine what production is possible out of these streams
	(c) Assess the forage base present in Great Lakes	- assure that the forage is there for the top predators
	(d) Determine where discrete fish stocks exist	- make sure fishing pressure will not cause localized stock depletions (e.g. destroying Bar River spawning stock)

TABLE 5 (Cont'd)

PROBLEM/ISSUE - INADEQUATE FISHERIES INFORMATION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS	COMMENTS
(2) INVENTORY AREAS OF CONCERN	(a) Determine effects of lamprey barriers and treatments (e.g. on walleye stocks)	- more information required to see what detrimental effects they have
	(b) Identify spawning beds and other sensitive habitat from both historical and present records	- necessary in order to priorize management projects

PROBLEM/ISSUE - HABITAT LOSS AND DEGRADATION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS	COMMENTS
(1) COOPERATE WITH OTHER GOVERNMENT AND PRIVATE AGENCIES	(a) Assist Ministry of Environment with contaminant monitoring program	- presently going on
	(b) Continue acid rain sensitivity monitoring	- presently going on
	(c) Contribute to physical clean-up of contaminant areas	- determine point sources and aid physically and financially in cleaning up problem
	(d) Work with Sea Lamprey Control to alleviate problems created by barriers and lampricide applications	- must increase two-way communications between these bodies
	(e) Encourage communication between Ministry of Natural Resources and timber companies to arrange timing and methods of resource extraction	- presently going on with Timber Management Planning

TABLE 5 (Cont'd)

PROBLEM/ISSUE - HABITAT LOSS AND DEGRADATION

OPTIONAL MANAGEMENT STRATEGIES	TACTICS	COMMENTS
(2) DECREASE EROSION AND SILTATION	(a) Encourage stream bank buffer areas on private lands	- improve logging practices, already on going
	(b) Develop stream bank stabilization programs	- protects habitat as well as being aesthetically pleasing, possible CFIP and volunteer programs
	(c) Deter building on hazard land	- requires assistance from municipalities
	(d) Encourage improved agricultural practices	- educate in terms of drainage and fence row regeneration
	(e) Encourage better dredge and fill practices as well as stream crossing methods	- educate contractors as well as regulate work
(3) DECREASE INDUSTRIAL CONTAMINATION	(a) Work within appropriate agencies to regulate effluent and spills	- presently underway
	(b) Increase companies responsibilites for a healthier environment	- larger fines and jail terms for mishaps increase responsibility
(4) WETLAND PRESERVATION	(a) Evaluate wetlands	- urgent need for involvement in Provincial programme
	(b) Develop extension programme	- increases public awareness

3.3 Benefits/Disbenefits Associated With Optional Management Strategies

Table 6 summarizes the social benefits/disbenefits and associated monetary costs of implementing the various management strategies. These criteria should be considered when commenting on strategies and tactics.

Some strategies are extremely expensive to undertake and implementation of these high cost strategies will mean less opportunity for fisheries improvement in other areas. Similarly, high social costs accompany some management strategies, and these should also be carefully considered.

TABLE 6: SOCIAL AND MONETARY COSTS ASSOCIATED WITH IMPLEMENTATION OF MANAGEMENT STRATEGIES

PROBLEM	STRATEGY	TACTIC	SOCIAL BENEFITS/DISBENEFITS	MONETARY COSTS
Exploitation	Control Harvest	Reduce quotas and catch limits	- may add to complexity of laws - reduces success rates	low
		Allocate fish resources between commercial and sport users	- decreases commercial opportunities and increases enjoyment for sport fishermen	low
		Designate areas as fish sanctuaries during spawning periods	- decreases fishing opportunities but protects future stock	low
		Permit fly-fishing only on particular trophy streams	- decreases opportunities in general but increases enjoyment for some fishermen - provides quality fishing	low
		Winter season closures in northeast section of the District	- decreases fishing opportunities but preserves quality fishery	low
		Redistribute fishing pressure	- offers alternate opportunities	moderate
		Control illegal fishing at barriers	- offers more fish for law abiding anglers	moderate
	Restore Or Enhance Habitat	Spawning bed rehabilitation	- produce more fishing opportunities in the future	moderate
		Destroy or offer alternative to spawning run impasses	- increases fish production - more fish for anglers	very high
		Increase number and size of sanctuaries	- immediate decrease in fishing opportunities for future increase	low
	Stocking Program	Introduce adult walleye on rehabilitated spawning grounds	- possible self-sustaining stocks for future fishing opportunities	high
		Introduce walleye into lakes as predator on undesirable species	- more angling opportunities and controls a "nuisance" fish	high
		Stock splake on put-delayed-take basis	- provides bigger return on fishing opportunities	high

TABLE 6 (Cont'd)

PROBLEM	STRATEGY	TACTIC	SOCIAL BENEFITS/DISBENEFITS	MONETARY COSTS
	Promote Angling for Under-Used Species	Advertise and educate anglers in enjoyment value of fishing this portion of the resource	- provides greater variety of fishing opportunities	moderate
		Develop angling methodology	- aids anglers in harvesting under-used species	moderate
		Direct tourist operators towards this resource	- boosts tourism economy; provides alternatives for tourist operators	moderate
Public Awareness & Perception	Education	Introduce conservation ethics through school curriculum	- creates awareness in future resource users	low
		Hold public seminars	- redirects user preferences	moderate
		Proactively develop media	- redirects user preferences	moderate
		Increase television productions	- redirects user preferences	high
	Participation in Fisheries Management	Form an advisory committee	- increases public involvement in fisheries management and planning	low
		Involve public in CFIP and CFFP projects	- increases public involvement in fisheries management	high
		Educate co-managers	- increases knowledge of long-range planning	moderate
	Increase Opportunities For Non-Consumptive Users	Accommodate tourists at fish culture facilities	- reduce emphasis on consumptive uses - educates the public	high
		Provide viewing areas at spawning runs	- reduces emphasis on consumptive uses: fishing	high
		Publicize viewing areas	- increases interest in non-consumptive use of fish	moderate

TABLE 6 (Cont'd)

PROBLEM	STRATEGY	TACTIC	SOCIAL BENEFITS/DISBENEFITS	MONETARY COSTS
Undesirable Species Introduction	Education	Inform sportsman of live-bait dumping hazards	- preserves quality fishery for future	low
		Inform public of accidental smelt transfer	- preserves quality fishery for future	low
	Regulatory Solutions	Ban live-bait use	- damages live-bait trade however preserves quality fishery	low
User Conflicts	Promote Cooperation Among User Groups	Hold regular meetings	- opens communication channels	low
		Organize a Permanent Advisory Committee	- maintains communication, and continuity	low
		Educate user groups	- increases understanding of fisheries management	moderate
	Allocate Resource	Designate particular areas for sport and commercial use	- decreases interactive tension	low
		Research Pacific salmon affects on forage stock	- protects commercially viable forage stocks	very high
	Modified Timber Practices	Delineate buffer zones around tourist operator lakes	- preserves wilderness experience as well as healthy fish stocks	high
		Use winter roads	- decreases summer access	very high
		Set up alternate tourist operations	- uproots present operations but taps other fisheries resources	very high
Inadequate Fisheries Information	Assess Present Populations	Collect lake specific harvest information	- identifies overharvest situations	very high
		Assess Great Lakes feeder stream assessment	- determines production capabilities of these areas	very high
		Assess forage base present in Great Lakes	- identifies overharvest and predation situations	very high
		Determine where discreet fish stocks exist	- determines localized overharvest situations	very high

TABLE 6 (Cont'd)

PROBLEM	STRATEGY	TACTIC	SOCIAL BENEFITS/DISBENEFITS	MONETARY COSTS
	Inventory Areas of Concern	Determine lamprey barrier and treatment effects	- preserves present stocks if found to be detrimental	very high
		Identify sensitive habitats	- preserves productive area	high
Habitat Loss and Degradation	Cooperate With Other Government & Private Agencies	Assist Ministy of the Environment with contaminant monitoring program	- produces healthy, edible fish stocks	high
		Continue acid-rain sensitivity monitoring	- determines reasoning behind fish stock depletions in the sensitive areas	high
		Contribute to clean-up of contaminated areas	- improves quality of fish stocks	high
		Develop remedies to sea lamprey control problems	- improves quantity of fish stocks	very high
		Communicate with timber companies re: practices	- improves fish stocks and angling experiences	moderate
	Decrease Erosion and Siltation	Encourage stream bank buffer areas on private lands	- improves spawning habitat leading to improved stocks	moderate
		Develop stream bank stabilization programs	- improves spawning habitat leading to improved stocks and better aesthetic qualities	moderate
		Deter building on hazard land	- decreases siltation plus preserves buildings	low
		Improve agricultural practices	- improves spawning habitat and water quality, leading to improved fish stocks	low
		Improve dredge and fill practices as well as stream crossings	- improves spawning habitat leading to improved fish stocks	low
	Decrease Industrial Contamination	Regulate effluent and spills	- improves water quality	moderate
		Increase companies responsibilites for their actions	- improves water quality	moderate
	Wetland Preservation	Evaluate wetlands	- ranks value of wetlands	moderate
		Develop extension programmes	- educates public as to wetlands value	moderate

4.0 PUBLIC REVIEW

SAULT STE. MARIE DISTRICT FISHERIES MANAGEMENT PLAN
MINISTRY OF NATURAL RESOURCES

BACKGROUND INFORMATION
AND
POTENTIAL MANAGEMENT OPTIONS

QUESTIONNAIRE

Having had the opportunity to review background fisheries information, issues or problems, and potential management options, we would like to solicit any thoughts and suggestions you may wish to offer.

In order to direct your input towards the proposals we have developed the following questionnaire. This will permit us to more easily consider your input during the preparation of a draft fisheries management plan.

We would ask that you return your questionnaire to the Sault Ste. Marie District Office no later than May 1,1987.

#1. Having reviewed the background information presented in the report, do you believe that we have accurately represented the present state of the fisheries in the Sault Ste. Marie District?

Yes _____

No _____ (If no, please describe the specific inaccuracies that you believe exist in the space provided below).

_____

_____

_____

_____

_____

#2a. A number of issues or problems have been identified in Section 2.5 of the report. Please rank the following in order of importance:

Exploitation	_____	User Conflicts	_____
Public Awareness and Perception	_____	Inadequate Fisheries Information	_____
Undesirable Species Introduction	_____	Habitat Loss and or Degradation	_____

#2b. How serious do you feel your first ranked problem is?

_____

#2c. Are there any specific water bodies in the Sault Ste. Marie District that have specific problems that you would like to bring to our attention?

Water Body	Issues or Problem from List in Part 2a	Other Comments or Observations
eg. Crab Lake		no small fish

#3. If you believe any issues or problems have been missed, please list them below and rank in order of importance.

Issue/Problem

(i)

(ii)

(iii)

(iv)

(v)

#4. Do you believe that we have identified all of the potential management strategies and tactics to address the stated issues or problems?

Yes _____ No _____
(If No, please list additional strategies and/or tactics below).

Problem	Additional Strategies/Tactics
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

#5. A number of optional management strategies and tactics have been identified in Section 3.2 of the report. Please indicate below by number and letter which (if any) option tactic you believe would most help resolve the problem or issue. (Several options and tactics may be chosen).

Exploitation _____

Public Awareness and Perception _____

Undesirable Species Introduction _____

User Conflicts _____

Inadequate Fisheries Information _____

Habitat Loss and/or Degradation _____

#6. Please feel free to make any other comments or suggestions on this phase of the development of the fisheries management plan for the Sault Ste. Marie District.

_____
_____
_____
_____
_____
_____

#7. How do you make use of the fisheries resource?

Non-consumptive user _____

Sport fisherman _____

Commercial fisherman _____

#8. What fish species in the District do you prefer?
Please list in order of preference.

_____

_____

_____

Thank you for responding to this questionnaire.

If you wish to have further input to this planning exercise, please provide your name and address so that we may inform you when a draft management plan is prepared and invite your review and comments.

_____

_____

_____

_____

_____

Appendix I Summary of Fisheries Resources in the Sault Ste. Marie District

Zone	Surface Area (ha.)	Species Group	Species Potential Yield (kg/yr)	Allocation of Allowable Harvest: Sport Fishery (kg/yr)	Allocation of Allowable Harvest: Commercial Fishery (kg/yr)
Lake Huron	36028	L.Whitefish	1680	860	4225
		Trout/ Salmon	15080	14460	620
		Walleye	16330	13570	2760
		N.Pike	10850	10540	310
		Smallmouth Bass	12560	12560	0
		Other	31480	0	0
	TOTAL		87980	51990	7915
Lake Superior	257854	L.Whitefish	68830	3570	180450
		Lake Trout	64070	6600	31720
		Top Predators	179030	45180	34480
		Herring	34420	0	10000
		Chub	29650	0	36940
		Other	143640	5640	7040
	TOTAL		519640	60990	300630

Notes:

Lake Huron:

- 1987 Commercial fish quotas are for one licenced commercial fisherman out of the Sault District for quota zone, NC-01, which consists of waters within three M.N.R. Districts.
- species potential yields calculated for rehabilitated Lake Huron where a balanced top predator component would be present
- potential yield calculations include lower St. Marys River and George Lake

Lake Superior:

- present commercial quotas for zones 32, 33, and 34.
- top predators include: brook, and rainbow trout, Pacific salmon, walleye, and northern pike. The allocation to the commercial fishery is made up entirely of pink salmon.

Appendix I (Cont'd): Summary of Fisheries Resources in the Sault Ste.Marie District

Sport Fish Species	No.of Known Inland Waters With Species Present	Total Known Water Area Available to Species (ha.)	Species Estimated Potential Yield (3) (kg/ha/yr)	(kg/yr)	% of Total
Lake Whitefish	7	502	0.61	306	0.5
Lake Trout (natural)	86	8452	0.63	5333	9.0
Lake Trout (stocked)	21	4797	0.48	2284	3.8
TOTAL	107	13249	0.57	7617	12.8
Brook Trout (natural)	324	17643	0.63	11182	18.8
Brook Trout (stocked)	45	1276	2.00	2552	4.3
TOTAL	369	18919	0.73	13734	23.1
Splake (1) (stocked)	3	138	2.00	275	0.5
Resident Rainbow Trout	9	1865	0.21	388	0.7
Resident Walleye	13	4142	0.98	4040	6.8
Yellow Perch	8	1904	0.17	321	0.5
Northern Pike	29	6749	0.61	4129	6.9
Smallmouth Bass	29	6180	0.60	3691	6.2
Other (2)	1922	20215	1.24	24975	42.0
TOTAL	-	-	-	59475	100.0

NOTES: (1) - Splake will not be included in District totals therefore District potential yield is 59200 kg/yr.

(2) - Other represents those lakes with unknown potential
- 35% of other total potential yield given to sport fish species. (mainly "trout waters")

(3) - Overall 79.1% - trout (includes other above)
6.8% - walleye
14.1% - other

APPENDIX II
FISH STOCKING LIST

RAINBOW TROUT

WATER BODY	TOWNSHIP
Kinsmen Park Reservoir - Crystal Creek	Tarentorus

SPLAKE

WATER BODY	TOWNSHIP
Hart Lake	Aberdeen
Pipe Lake	Nicolet
Vixen Lake	Daumont
Tower Lake	Aberdeen

BROOK TROUT

WATER BODY	TOWNSHIP
Gawas Creek	St. Joseph
Sandy Lake	Duncan
White Birch Lake	Jarvis
Weashkog Lake	Jarvis
Pickard Lake	Tupper
Crooked Lake	Jarvis
Poem Lake	Nahwegezhic
Prince Lake	Prince
West Jocko Lake	Kincaid
Caycee Lake	Slater
Little Turkey Lake	Wishart
Lake #11	Nicolet
Armour Lake	Hoffman
Round Lake	McIlveen
Patter Lake	Gaudry
Sucker Lake	Kincaid
McGovern Lake	Olsen
Brown's Lake	Hilton
Batchawana Lake	Norberg
Bojack Lake	Tupper
Brilliant Lake	Jarvis
Brown's Creek	Hilton
Busch (Mary) Lake	Gapp
Chalmers Lake	Lunkie
Clove Lake	Carton
Elizabeth Lake	Duncan
Finnlander Lake	Aweres
Grant Lake	McMahon

BROOK TROUT (Cont'd)

WATER BODY	TOWNSHIP
Havilland Lake	Fenwick
Hoath Lake	McMahon
Huff Lake	Smilsky
Kaufman Lake	Jarvis
Lake #1 (Aquarium)	Hoffman
Lake #2	Nahwegezhic
Lake #3 (Howard)	Gapp
Lake #3	Smilsky
Lake #4	Smilsky
Lake #9	Jarvis
Lake #11	Smilsky
Mable Lake	Duncan
Meenach Lake	Davieaux
Metivier (Dam) Lake	Whitman
Mountain (Hugli) Lake	McMahon
Phelbin-1 Lake	Jarvis
Poem Lake	Nahwegezhic
Roussain (Island) Lake	Whitman
Strums Lake	Curtis

LAKE TROUT

WATER BODY	TOWNSHIP
Jarvis Lake	Jarvis
Northland Lake	Deroche
Upper Island Lake	Aweres
Trout Lake	Aweres
Devil's Lake	Whitman
Big Turkey Lake	Wishart
Quintette #2 Lake	Olsen
Lake Superior	Lapointe's Pt.
Lake Superior	Harmony
Lake Superior	Mica Shoal
Lake Superior	Pancake Shoal
Lake Superior	Batchawana Bay
Lake Superior	Montreal River
Lake Superior	Goulais Pt.
Lake Superior	Corbeil Pt.
Lake Superior	Coppermine Pt.
Lake Superior	Lapoint's Pt.
South Anvil Lake	McIlveen
Ranger Lake	Reilly
Fern Lake	Whitman
Garden Lake	Hubert
Island (McMann) Lake	McMahon
Lonely (Meredith) Lake	Meredith
McCarrolls Lake	Meredith
Patten Lake	McMahon
Robinson Lake	Vankoughnet